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A prospective study on aetiology and outcome of haemospermia from a urology unit in Sri Lanka

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Abstract

Introduction: Haemospermia is an alarming symptom for ordinary members of the public. The worry become greater as it has been described as a warning sign of a prostate cancer in the media.

Objectives: The aim of the study was to identify the aetiological factors and outcome of haemospermia in a cohort of patients.

Methods: All patients with newly diagnosed haemospermia treated at the urology unit of Colombo South Teaching Hospital over a period of 5 years (2013–2018) constituted the study sample. Data related to demographics, symptomatology, clinical findings, investigations, treatment given and outcome during follow-up were recorded prospectively.

Results: There were 94 men with haemospermia who sought treatment during the study period. Mean age was 43.7 years (range: 23–67, median = 41). Twenty-seven (29%) patients had clinical evidence of prostatitis and/or a positive seminal fluid culture. One patient each had prostate carcinoma, prostatic cyst, severe hypertension, sclerotherapy for haemorrhoids, post-chemotherapy and post-epididymectomy. The patient who had high blood pressure (220/150 mmHg) was found to have mesangio-proliferative glomerulonephritis. In 61 (65%) patients, there was no identifiable cause.

Conclusion: The majority of patients with haemospermia are aged < 45 years and have a benign aetiology. As haemospermia is self-limiting in the majority of cases, extensive investigations are unnecessary. Advanced and invasive tests should be confined to those with abnormal clinical findings, and to those with persistent or recurrent haemospermia.

Level of evidence: Level IV.

Keywords

Haemospermia, prostate cancer, prostatitis, South Asia, seminal fluid

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Introduction

Haemospermia is defined as the presence of blood in the ejaculate or seminal fluid, and is a dreadful symptom for any healthy man, especially in the middle of an otherwise pleasurable moment in life. Spontaneous passage of blood from any organ of the body like haemochizia, haemoptysis, haemetemesis and haematuria is considered an ominous symptom of cancer in medical science, and this fear is projected towards haemospermia by both medical personnel as well as members of the general public, including affected

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men. Sometimes haemospermia is given prominence as a symptom of prostate cancer in the media, including promotional material for cancer care institutes and health-related websites.[1] This may further increase the afflicted person's fear. The exact incidence of haemospermia is difficult to calculate as, most of the time, ejaculate goes unobserved during sexual intercourse. However, the incidence of haemospermia in men screened for prostate carcinoma has been found to be 0.5%.[2]

Available data on aetiology and management of haemospermia is limited, especially from Asian countries. According to a study from India, 18% of patients with haemospermia had genitourinary tuberculosis.[3] One study from the US concluded that 14% of patients with haemospermia had prostate carcinoma. [2] A study from China revealed incidence of cancer to be 3% among men with haemospermia.[4] With differences in the incidence of prostatitis and prostate cancer in Asian countries compared to the western world, it is important to study the clinical problem of haemospermia in real clinical practice to enable proper management, including effective advise for the public. In a study done by us on prostate cancer over 5 years, we found that haemospermia is a rare presentation of prostate cancer in Sri Lanka, seen in only 1% of a cohort of 278 patients with prostate cancer.[5] Sri Lanka is an island nation in the Indian ocean, with a population of 21 million and categorized as a low–middle income country. Prostate cancer is the fifth most common cancer among Sri Lankan men with an age standardized rate of 5.5/100,000.[6] The aim of this study was to identify the possible causes for haemospermia in a cohort of Sri Lankan patients and the long-term outcome after the application of existing management strategies.

Methods

All patients with a complaint of haemospermia treated at the urology unit of Colombo South Teaching Hospital over a period of 5 years (from 1 August 2013 to 31 July 2018) constituted the study sample. Data related to demographics, symptomatology, clinical findings, investigations, treatment given and outcome were recorded on a proforma sheet. Data were upgraded as the follow-up continued. Patients were advised to attend the clinic after 3 months and 1 year, or whenever haemospermia recurred. Patients who had undergone any instrumentation or biopsy of the lower urinary tract (e.g. core biopsy of the prostate) immediately before the onset of haemospermia were excluded from the study sample.

According to the management protocol of the unit, physical examination including assessment of blood pressure, digital rectal examination (DRE), ultrasonography of the urinary tract and scrotum, and cultures of seminal fluid and mid-stream urine were performed for all patients. A transrectal ultrasound scan (TRUS) of the prostate and seminal vesicles was done for patients with recurrent or persistent haemospermia, or those with an abnormal finding during the DRE. Serum prostate specific antigen (PSA) levels were tested for patients aged $>$ 40 years.

Treatment given was mainly empirical based on clinical impression. Patients who had clinical features of prostatitis like post-ejaculatory pain, perineal pain, testicular pain or a tender prostate at DRE were prescribed the antibiotic levofloxacin (500 mg once a day in the night for 1 month). The choice of levofloxacin was based on local antibiotic policy and clinical response to it. The patients with a positive seminal fluid culture were treated according to the antibiotic sensitivity test for 1 month. Those who had lower urinary tract symptoms, a clinically benign prostate and a normal serum PSA level were prescribed finasteride. It is known that finasteride, a 5-alpha reductase inhibitor, reduces the vascularity and size of the prostate. If any abnormality was detected during DRE, further appropriate investigations—TRUS of prostate and seminal vesicles, magnetic resonance imaging (MRI) or TRUS-guided core biopsy of the prostate—were performed. Those who had a specific diagnosis like prostate carcinoma, prostate cyst or urethral stricture were treated accordingly.

If the haemospermia recurred or was persistent after these initial investigations and treatment strategies, such patients were further evaluated with cystoscopy, blood count, blood picture, coagulation profile, urine for acid-fast bacilli, urine for culture of *Mycobacterium tuberculosis*, Mantoux test, and an MRI or CT (computed tomography) scan of the prostate and pelvis. If such patients were on antiplatelet therapy, they were withheld after concurrence from the cardiologist.

Approval for the study was obtained from the ethics review committee of the Institute. All participants gave informed, written consent to be included in the study.

Results

There were 94 men with haemospermia who fulfilled the inclusion criteria during the study period of 6 years. Mean age was 43.7 years (range: 23–67, median = 41). The majority (58%) were aged $<$ 45 years (Table 1). Duration of haemospermia ranged from a single episode to recurrent episodes over 6 months. Anxiety about malignancy was a reason for seeking medical help in 51 (55.4%) patients. The episode of haemospermia itself was painless in all, but 15 had post-ejaculatory penile, testicular, perineal or groin pain. Three had dysuria and two had haematuria. One patient had haemopyospermia. One patient who had associated haematuria in addition to haemospermia was passing blood in the urine soon after ejaculation only. This raised the possibility of him also having some degree of retrograde ejaculation; thus, he was also investigated according to the haematuria protocol. Seven patients were on antiplatelet drugs (five on aspirin and two on clopidogrel).

Table 1. Age distribution.

Age (years)	Number
< 40	40
41–45	15
46–50	6
> 50	33
Total	**94**

Table 2. Causes of haemospermia among study participants.

Diagnosis	Number
Prostatitis	27
Prostate carcinoma	1
Prostatic cyst	1
Uncontrolled hypertension	1
After sclerotherapy for haemorrhoids	1
Post-chemotherapy	1
After epididymectomy	1
Cause unidentified	61
Total	**94**

Examination of the abdomen was normal and the prostate was clinically benign in all except one patient, who had a clinically malignant prostate. Three had a tender prostate on DRE. Careful examination of the epididymis and cord structures did not reveal any solid masses, thickening, induration or nodularity in any of the patients.

Ultrasonographic imaging revealed varicocele in seven, epididymal cyst in six, hydrocele in four, and prostatic cysts and calcification of the prostate in one patient each. Serum PSA level was < 4 ng/ ml in 86 (92.5%) patients (range: 0.2–11.3 ng/ml; median: 0.98 ng/ml). Urine cultures were negative in all patients, but seminal fluid culture yielded growth in five (*Escherichia coli* in two, *Streptococcus* in two and *Chlamydia* in one). One had a urethral stricture. The patient with a clinically malignant prostate had a serum PSA level of 11.3 ng/ml and underwent TRUS-guided core biopsy of the prostate, which revealed a Gleason 3+3 adenocarcinoma of the prostate. He was 54 years old, and underwent radical radiotherapy and androgen deprivation therapy with the help of an oncologist. Six patients had diagnostic cystoscopy and five were normal, while one patient had a urethral stricture.

The possible causes for haemospermia among the study participants are listed in Table 2. Twenty-seven (29%) patients had clinical evidence of prostatitis and/or a positive seminal fluid culture. The patient who had high blood pressure (220/150 mmHg) had a serum creatinine level of 1.94 mg/dl and underwent renal biopsy performed by the nephrologist. It revealed mesangio-proliferative glomerulonephritis. One patient developed haemospermia soon after chemotherapy for colorectal carcinoma but causality could not be established. Another patient who had epididymectomy for an adenomatoid tumour of the epididymis developed a single episode of haemospermia 3 months after surgery. It was not possible to ascertain whether the two incidents were related; however, he did not develop any further episodes of haemospermia thereafter. In 61 (65%) patients, there was no identifiable cause.

Those with prostatitis were treated with levofloxacin (500 mg daily) for 28 days. Those who had features of bladder outflow obstruction and those with continued haemospermia (44 patients) were given finasteride (5 mg once a day) for 3 months initially. Prostate cyst was deroofed endoscopically. Optical urethrotomy was offered to the patient with urethral stricture. Eleven patients (12%) developed recurrences of haemospermia during follow-up (median duration of follow-up was 11 months), but all except one were self-limiting. The patient who had the prostatic cyst deroofed continued to have episodes of haemospermia and prostatitis. After several months and many courses of antibiotics, the haemospermia settled. The histopathology of the resected prostatic cyst wall did not show evidence of malignancy.

Discussion

Since haemospermia is not common, primary care medical personnel have little experience of it and they are not in a position to reassure patients who are worried about a possible malignancy. Published data on the aetiopathology and natural history of haemospermia are limited, and this lack of prospectively collected data from adequate samples makes affected individuals more anxious when they discuss the issue with healthcare providers.

A previous study showed prostate carcinoma to be the cause of haemospermia in 13.7% of men screened for prostate cancer, and this may be the reason why haemospermia is highlighted prominently as a feature of prostate cancer.[2] However, the sample in the study consisted of men aged > 50 years (average age 61 years) who were screened for prostate cancer. Therefore, the results of this study cannot be extrapolated to the mostly young men with haemospermia who present to primary care clinicians. Another study that mainly looked at TRUS findings reported a cancer incidence of 3% among 270 men with haemospermia.[4] However, this sample consisted of men who were referred for TRUS scanning only. In this study

population of 94 patients, there was only one (approximately 1%) case of prostate cancer, and this particular patient also had clinical features and raised serum PSA levels that were suggestive of it. When haemospermia occurred with normal clinical findings and a normal serum PSA level, all of the identified aetiologies were benign, and even when cause was not found, haemospermia settled with simple therapeutic measures. Therefore, clinicians can confidently reassure those with haemospermia and normal clinical findings that they should not unduly worry about harbouring a cancer in their body. In such men, extensive investigations like CT urography and cystoscopy are not warranted. This is especially so in men aged $<$ 45 years of age where haemospermia is most common. Health information provided to the public via print and electronic media should be more evidence-based regarding the aetiology of haemospermia in order to avoid causing undue anxiety among afflicted individuals. A suitable statement is: 'Although certain cancers are known to cause haemospermia, it is almost never due to a cancer in men aged $<$ 45 years of age and in men aged $>$ 45 years it remains extremely rare that it is due to a cancer'.

The study involving 270 patients with haemospermia who had TRUS scanning found structural abnormalities of the seminal vesicles (46%), ejaculatory ducts (36%) and prostate (66%).[4] However, the extent to which these changes were responsible for causing haemospermia cannot easily be determined. In cases of persistent and refractory haemospermia, MRI has been found to be useful to identify structural abnormalities that can be corrected endourologically.[7] Although a study from neighbouring India involving 35 patients reported a high incidence (18%) of genitourinary tuberculosis to be the cause of haemospermia, this was not found in our study.[3] Tuberculous prostatitis is almost unheard of in Sri Lanka, though renal and epididymal tuberculosis are still seen in Sri Lanka.[8] The rarity of tuberculous prostatitis in Sri Lanka could be the reason for not identifying tuberculosis as a cause for haemospermia in this study population. This affirms the importance of locally conducted research in order to formulate pragmatic and efficacious therapeutic protocols and guidelines, which are convenient for the patients and cost-saving for the healthcare delivery systems.[9] Although causes like blood dyscrasias, testicular and seminal vesicular tumours, and vascular malformations have been reported as possible causes of haemospermia in case reports, they were not seen in this cohort, confirming their rarity.[10–14]

Conclusion

Although haemospermia is frightening and alarming to the patient, it is a painless, self-limiting and benign symptom in the majority of the cases. Therefore, health education material should not unduly scare the public about haemospermia by quoting rare possibilities of cancer. The majority of patients with haemospermia are aged $<$ 45 years, and should not be subjected to extensive and invasive investigations if the basic evaluation is normal. Advanced tests should be confined to those with persistent or recurrent haemospermia to avoid unnecessary anxiety and burden to the patient, and excessive cost to the healthcare delivery system.

Conflicting interests

The authors declare there is no conflict of interest.

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Ethical approval

The Ethics Review Committee of Colombo South Teaching Hospital, Sri Lanka approved the study (reference number: 304/2018).

Informed consent

All patients gave informed, written consent to be included in the study.

Guarantor

AMA

Contributorship

AMA and SNW conceived the idea of conducting this study; AMA, SNW, BB, SS, ALAMCA and MSGR were involved in the management of the patients, and the collection of data; AMA and SS wrote the manuscript; SNW and BB modified the manuscript; and all authors approved the final manuscript.

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